

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the present application:

76. (Currently amended) A method ~~including~~comprising:

receiving at a storage server, from a requester, a request for an object stored at the server;

in response to the request, determining at the storage server whether to cause a processing device in a cluster of processing devices to access the object stored at the storage server and perform an operation on ~~data associated with the object~~, wherein the ~~processing device~~cluster is separate from the storage server and is not in a path from the requester to the object, wherein said determining includes determining whether to cause the processing device to perform the operation based at least partially on a file space containing the object;

selecting, at the storage server, the processing device from among a plurality of processing devices that form the cluster, based on a classification of the processing device relative to other processing devices in the cluster, wherein the classification is based on a performance criterion;

assigning a specific access type to the processing device by the storage server when the storage server verifies the processing device satisfies restriction criteria;

causing the processing device to perform the operation in response to a specified outcome of said determining;

receiving at the storage server a result of the operation from the processing device; and

conditionally allowing access to the object in response to the request according to the result of the operation.

77. (Currently amended) A method as in claim 76, wherein the operation includes a plurality of processes, each process being performed at a separate processing device in ~~a~~the cluster.

78. (Previously presented) A method as in claim 76, wherein the specific access type allowing the processing device to perform the operation even while another user has a lock on the object.

79. (Previously presented) A method as in claim 76, wherein the storage server enforces a timeout for the operation;
wherein even if the timeout expires, the processing device completes the operation and reports the result of the operation to the server; and
herein the storage server stores the result of the operation for possible later use.

80. (Currently amended) A method as in claim 76, wherein the operation ~~comprises~~ is from the set of operations consisting of virus scanning, data decompression, data encryption, and data compaction.

81. (Previously presented) A method as in claim 80, wherein the operation is performed only if the processing device has open-for-scanning permission to access the object; and
wherein if the processing device has the open-for-scanning permission to access the object, the operation is performed even if the object is locked by another user.

82. (Currently amended) An apparatus comprising:
a storage server storing a set of objects and having a network interface; and
~~a processing device~~ a plurality of processing devices configured as a cluster that is connected to the storage server and that is not in a path from a client to the objects stored at the server,

wherein when the storage server receives a client request for an object of the set of objects through the network interface:

the storage server determines whether to cause the processing device to perform an operation on ~~data associated with the object~~, wherein the storage server determines whether to cause the processing device to perform the operation based at least partially on a file space containing the object;

the storage server selects the processing device from among a plurality of processing devices that form the cluster, based on a classification of the processing device relative to other processing devices in the cluster, wherein the classification is based on a performance criterion;

the storage server assigns a specific access type to the processing device when the storage server verifies the processing device satisfies restriction criteria;

the storage server sends a first message to the processing device that indicates the object to the processing device, in response to a specified outcome of the determination, to cause the processing device to access the object stored at the storage server and perform the operation;

the processing device sends a second message to the storage server that indicates a result of the operation; and

the storage server generates a response to the client request, the response conditionally providing access by the client to the object according to the second message.

83. (Previously presented) An apparatus as in claim 82, wherein the storage server enforces a timeout for the second message;

wherein even if the timeout expires, the second message is sent from the processing device to the server; and

wherein the storage server stores the result of the operation for possible later use.

84. (Currently amended) An apparatus as in claim 82, wherein the operation ~~includes~~ is from the set of operations consisting of virus scanning, data decompression, data encryption, and data compaction.

85. (Previously presented) An apparatus as in claim 84, wherein the operation is performed only if the processing device has open-for-scanning permission to access the object; and

wherein if the processing device has open-for-scanning permission to access the object, the operation is performed even if the object is locked by another user.

86. (Currently amended) A method ~~including~~comprising:

receiving at a storage server a client request for an object stored at the server;

selecting a processing device from among a plurality of processing devices that form a cluster, based on a classification of the processing device relative to other processing devices in the cluster, wherein the classification is based on a performance criterion;

assigning by the storage server a specific access type to a ~~the~~ processing device when the storage server verifies the processing device satisfies restriction criteria, the processing device separate from the storage server and not in a path from the client to the object, the specific access type allowing the processing device to perform an operation on the object even while another client has a lock on the object;

causing the processing device to perform the operation;

receiving at the storage server a result of the operation from the processing device; and

conditionally allowing access to the object in response to the client request according to the result of the operation.

87. (Currently amended) A method as in claim 86, wherein the operation ~~comprises~~ is from the set of operations consisting of virus scanning, data decompression, data encryption, and data compaction.

88. (Currently amended) An apparatus comprising:
a storage server storing a set of objects and having a network interface; and
a processing device coupled to the server, wherein the processing device is one of a plurality of processing devices configured as a cluster which is not in a path from a client to the objects stored at the server,

wherein:

the storage server receives a client request for an object of the set of objects through the network interface;

the storage server selects the processing device from among the plurality of processing devices, based on a classification of the processing device relative to other processing devices in the cluster, wherein the classification is based on a performance criterion;

the storage server assigns a specific access type to a processing device when the storage server verifies the processing device satisfies restriction criteria, the processing device separate from the storage server and not in a path from the client to the object, the specific access type allowing the processing device to perform an operation on the object even while another user has a lock on the object;

the storage server causes the processing device to perform the operation;

the storage server receives at the storage server a result of the operation from the processing device; and

the storage server conditionally allows access to the object in response to the client request according to the result of the operation.

89. (Currently amended) An apparatus as in claim 88, wherein the operation ~~comprises~~ is from the set of operations consisting of virus scanning, data decompression, data encryption, and data compaction.

90. (Currently amended) A storage server comprising:
a processor; and
a memory coupled to the processor through a bus, the memory storing executable instructions that cause the processor to select a processing device from among a plurality of processing devices that form a cluster, based on a classification of the processing device relative to other processing devices in the cluster, wherein the classification is based on a performance criterion, and to determine whether to cause a processing device to
perform an operation on ~~data associated with~~ an object requested by a client and to assign a specific access type to the processing device when the processor verifies the processing device satisfies restriction criteria, the specific access type allowing the processing device to perform an operation on the object even while another user has a lock on the object, wherein the processing device is separate from the storage server and is not in a path from the client to objects stored at the storage server.

91. (New) A storage server as in claim 90, wherein the operation is from the set of operations consisting of virus scanning, data decompression, data encryption, and data compaction.

92. (New) A storage server as in claim 90, wherein the operation includes a plurality of processes, each process being performed at a separate processing device in the cluster.

93. (New) An apparatus as in claim 82, wherein the operation includes a plurality of processes, each process being performed at a separate processing device in the cluster.

94. (New) A method as in claim 86, wherein the operation includes a plurality of processes, each process being performed at a separate processing device in the cluster.

95. (New) An apparatus as in claim 88, wherein the operation includes a plurality of processes, each process being performed at a separate processing device in the cluster.